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Tunneling Spectroscopy of Superconductor/Ferromagnet Proximity Effect Bilayers PAUL SANGIORGIO, SERGE REYMOND, Stanford University, TESU KIM, JINHO KIM, KOOKRIN CHAR, Seoul National University, MALCOLM BEASLEY, Stanford University — Previous studies of the superconducting proximity effect in ferromagnetic thin films have primarily focused on the non-monotonicity of the transition temperature as a function of film thickness. This behavior is due to the non-zero center-of-mass momentum acquired by a Cooper pair in this presence of an exchange field, which results in position-space oscillations of the pair density in the ferromagnet. In order to provide a complementary view of this phenomenon, we have made a systematic study of the tunneling density of states on the ferromagnetic side as a function of film thickness. We make our samples in a well-calibrated UHV sputtering chamber, allowing us to probe thicknesses both smaller and larger than the coherence length of the ferromagnet, which is on the order of 1 nm. By careful sample preparation, measurement, and data analysis, we are able to observe minute variations in the density of state, characteristic of samples with thicknesses greater than the coherence length. Work supported by DOE BES

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